Renata - I Series

(5K / 7.5K / 10K / 15K / 20KVA UPS)

User Manual

electronics & controls
power systems pvt. ltd.

An ISO 9001:2008 Company

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1. Introduction

On-Line UPS can supply adjusted stable uninterruptible power to electrical equipments. When AC fails, Voltage vary, voltage surge and noise conditions, UPS can keep the load works normally. In common operations, UPS first feed the power to rectifier for adjust and eliminate the unstable factor, then through inverter transfer the DC to pure AC to the Load. When UPS detect AC Voltage below the acceptable range of load, UPS turn from AC to battery Mode. Under this condition, battery power through inverter supply and supply stable power to Load. When AC turns back to the acceptable range of Load, Ups automatically adjust power again to the rectifier and inverter. Meanwhile, UPS charge the Battery. During the full courses, it has no transfer time from AC to battery backup, operating will not be interrupted, So we call it true on line UPS.

Further more, when inverter stopped output if UPS fails, system will automatically transfer to the bypass. AC supplies power directly to load. All courses will not power off.

UPS can supply stable power to electrical machines and carry with the following characters:

- Improve Power quality.
- Reduce the noise Disturb.
- Compatible with most loads.
- Output Protection when power off.
- Perfect battery protection.

2. Theory of Operation

2.1. Modes of Operation

1. AC normal mode:

As shown in Fig 1.1, the AC power supply passes through rectifier / inverter / static switch / filter to the output and chargers the battery by the charger.

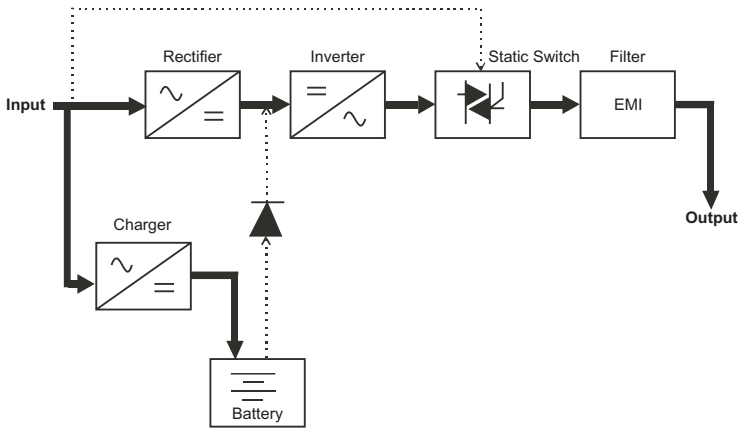


Fig: 1.1

***2. Power Failure Mode**:*

As shown in Fig 1.2, the battery supplies the output to Load through the inverter.

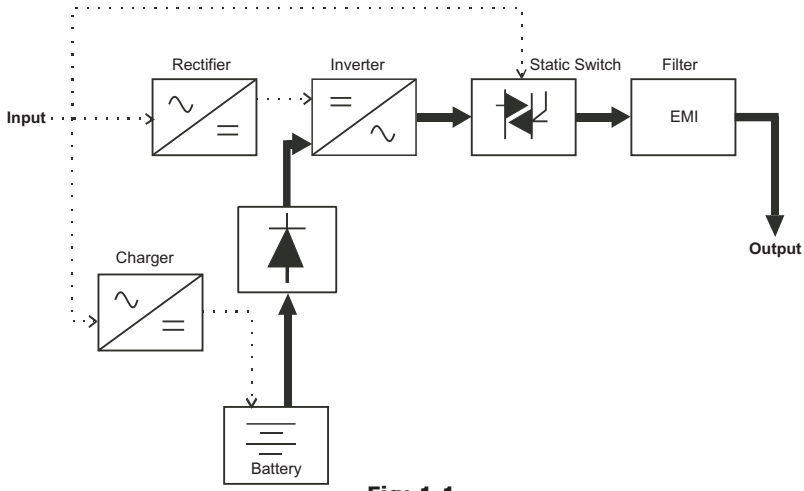


Fig: 1.1

***3. Bypass Mode**:*

As Shown in Fig 1.3, the unit will switch to bypass mode under the following conditions:

1. Over Load

2. Inverter Failure

3. The inverter switch on the front panel isn't pushed to the "ON" or within the initial 25 seconds after it is pushed to "ON"

4. The inverter switch is pushed to the "OFF".

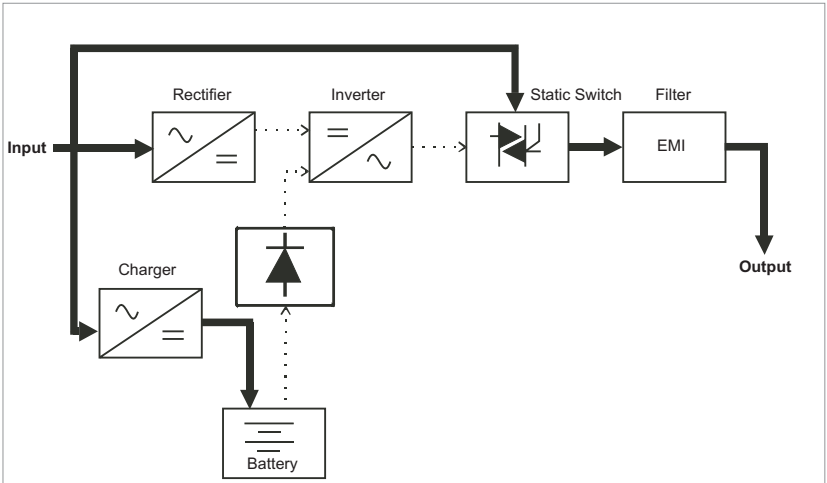


Fig: 1.3

B. External Views

3. Safety Instruction

3.1 (A). Preparation:

To achieve ultimate performance of this on-Line UPS, Please observe the Following.

1. Read the User's Manual.
2. Follow the Operating Instructions closely.
3. Be gentle and careful when moving the unit around.
4. Plug into the correct power source.
5. Never open the cabinet to avoid electric shock and damaging to the unit.
6. Do not apply load which is exceeds the rated capacity, Otherwise damage may occur.
7. Keep the User's manual handy for quick reference.
8. Refer the trouble shooting guide when having problems.
9. Keep the unit clean all time.

3.1. (B). System setup:

1. Precaution

1. Remove all the wires.
2. Handle the unit very carefully and avoid dropping.
3. Never leave the unit upside down.

3.2. Installation

Refer to the following Instructions for system install:

Input:

a. Never plug the unit into a wall outlet. The standard 15A wall outlet will not support the heavy load of the unit.

b. It is safe to connect the unit to the nearest utility panel.

c. Refer Fig for terminal block connections. The input power should be connect to the right terminals. Note also that UPS output and external batteries also share the same terminal block.

d. Use high quality power wires.

e. Always turn power off before wiring.

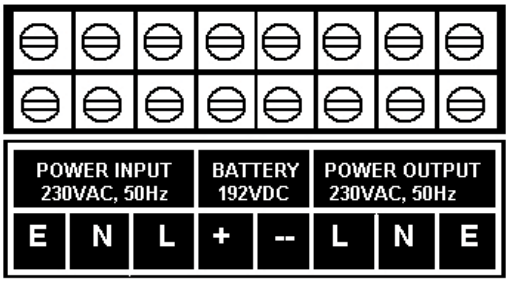
f. Please follow the standard wiring procedures.

g. Check for the correct Polarity.

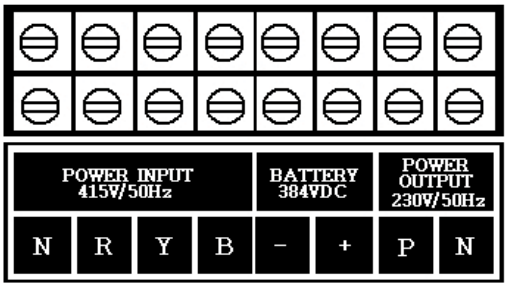
h. Avoid sharing the same terminals with other equipments.

i. When wiring is done make sure that no wires touches the metal case to prevent short circuit.

5kVA/192VDC/11 UPS TERMINAL CONNECTION DETAILS



7.5/10//15/20KVA/384VDC/31 UPS TERMINAL CONNECTION DETAILS



3.3. Operating Instructions:

3.3.1. Pre-testing

To ensure proper functioning of the UPS, the following step should be followed:

1) Double check the site of installation.

2) Make sure that the Power switch on the rear panel is OFF.

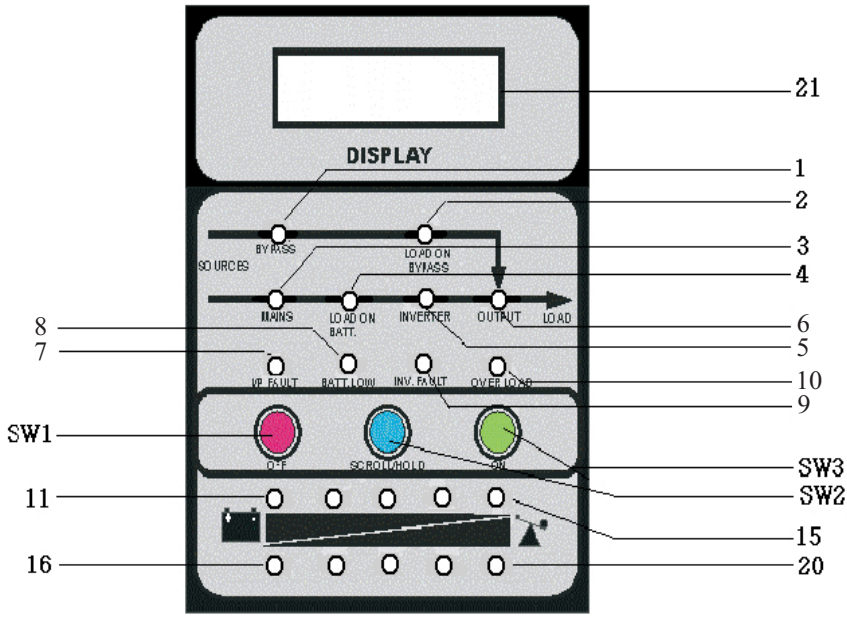
3) Unplug all loads.

4) Use a tester to check if the input voltage is at rated level.

5) Gently twist the input/output wiring and tighten loose ones.

6) Inspect the input/output fuses to be in working order.

3.3.2. Controls and LCD Indicators:



1. Bypass On (Green).
2. Load on Bypass (Yellow).
3. Mains ON (Green).
4. Load On Battery (Yellow).
5. Load On Inverter (Green).
6. Output ON (Green).
7. Input fault (Red).
8. Battery Low (Red).
9. Inverter Fault (Red).
10. Over Load.(Red).

11-15. Battery Levels LED Indicators.

16 – 20 Load Levels LED Indicators.

21. Display.

Control Switches:

1. ***SW1*** - Inverter OFF Switch (Red).

   Turn OFF the Inverter, When press SW1(red) for 5 Sec, the unit will turn off the inverter and unit transfer from normal operation to Bypass mode.

2. ***SW2*** - DPM Scroll (Blue).

3. ***SW3*** - Inverter ON Switch (Green).

   Turn ON the Inverter, When press SW3 (Green) , the unit will turn ON the inverter and unit transfer from Bypass to Normal operation..

Power Switch

Located at the rear panel of the unit controls the input AC power and Input batteries power for the unit.

3.3.3. Power ON Procedure:

The procedure is very simple. Please follow the steps for bellow operations.

Start Up.

a) Make sure that the power switch is OFF and there is no equipment connected to the unit.

b) Check for correct input voltage.

c) Power ON the unit and the LINE, BYPASS, Load ON Bypass and Output indicator will be ON. The cooling fans will also be running.

d) In about 20 seconds, the Bypass Indicator will be OFF while the Inverter will be On indicating every thing is normal.

e) Turn OFF the AC Input and Line and Bypass Indicator will also be OFF and also Load on Battery, Input Fault will be ON .The Audible alarm will beep in 4 Seconds Interval indicating batteries is in use .

f) Press SW1 button for 5 Seconds, inverter will be powered off.

g) Press SW3, Inverter will get ON.

h) Now the unit is ready to use.

NOTE: Please keep the unit running for at least 12 hours so that battery could be fully charged. During this period the INVERTER may be turned OFF.

3.3.4. Unused for Extend Period

I. Leave all the switches OFF position if unused for more than 10 days.

II. If Unused for more than 3 Months, repeat the start up procedures and let the unit running at least 24 hours to prolong the batteries life.

III. UPS and Battery Maintenance.

4. Maintenance

4.1. UPS Maintenance:

1. Keep the unit clean and vacuum the ventilation intake periodically.
2. Wipe with soft and damp cloth.
3. Check the loose and bad connection monthly.
4. Never leave the unit on an uneven surface.
5. Position the unit to allow at least 50cm clearance between the surroundings of the unit. Keep the ventilation intake open.
6. Avoid direct sunlight, rain and high humidity.
7. Stay away from fire and extremely hot location.
8. Do not stack materials and standing on the top of the unit.
9. The unit should not be exposed to corrosive air.
10. The normal operating temperature is 0 – 45^{o}C.

4.2. Battery Maintenance:

1. The lead- acid free(SMF) battery requires very low maintenance.
2. Check the Battery links loose connections.
3. Keep the battery terminals clean for every month.
4. If the battery you are using is Tubular(like the automobile use), you should check the electrolyte every three months. Refill with distill water when the electrolyte level is too low.
5. Keep the Batteries at cool place.(25^{o}C.)

5. Troubleshooting

A. LED Indicators

*** - Indicator ON** **0 - Indicator OFF** **((- Buzzer**

LED Indicators Status										Buzzer		Status	Action
Mains	Bypass	Load on Battery	Load on Bypass	Load on Inverter	Output ON	Mains Fault	Batt. Low	Inv. Fault	Over load				
*	*	0	0	*	*	0	0	0	0			Normal	
0	0	*	0	*	*	*	0	0	0	((	With every 4 sec	AC power failure/ Battery Mode	
*	*	0	*	0	*	0	0	0	0			ByPass Mode	
0	0	*	0	*	*	*	*	0	0	((	With every 4 sec	Battery Low	
*	*	0	*	0	*	0	0	*	0	((	Continu-ous Beeping	Inverter fault	Ref to Fig:IV-4
*	*	0	*	0	*	0	0	0	*	((	With every 1 sec	Overload/ Output Short	Ref to Fig:IV-3
0	0	*	0	0	0	*	0	0	0	((	With every 4 sec	After Battery low Trip	Check the Battery Supply
0	0	0	0	0	0	0	0	0	0			System Shutdown	Check the I/P MCB

B. Troubleshooting Guide

A. "Mains ON" Indication not ON

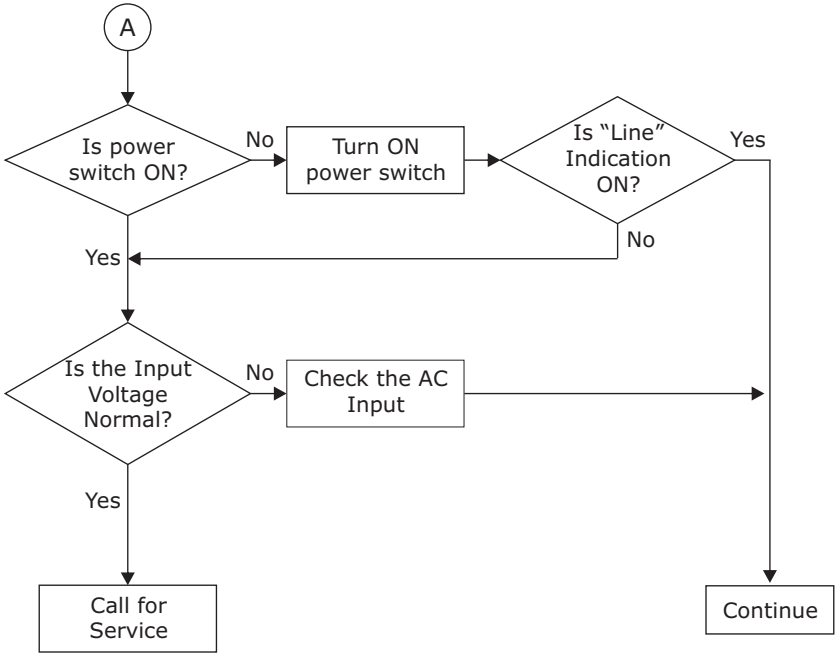


Fig : IV-1

B. Inverter Indication not ON

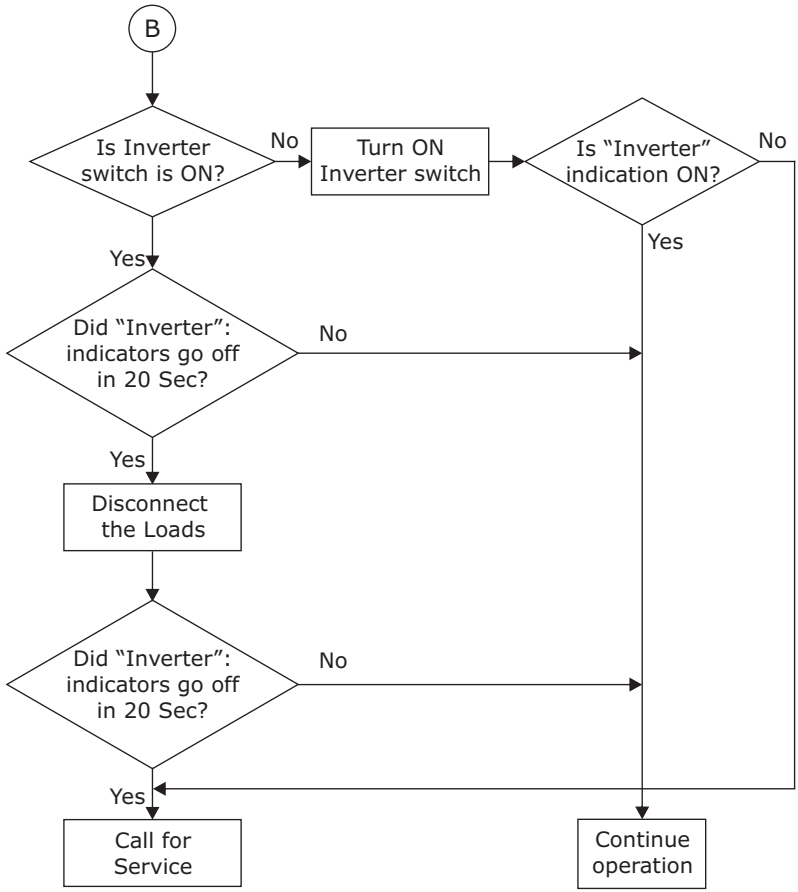


Fig : IV-2

C. Load on bypass Indication ON

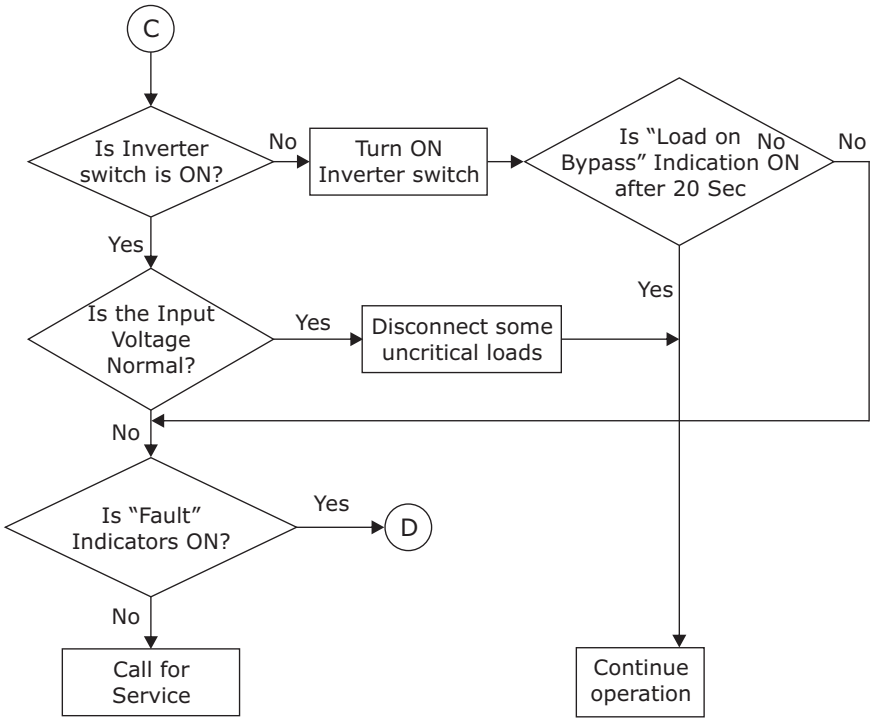


Fig : IV-3

D. "INVERTER FAULT" Indication ON

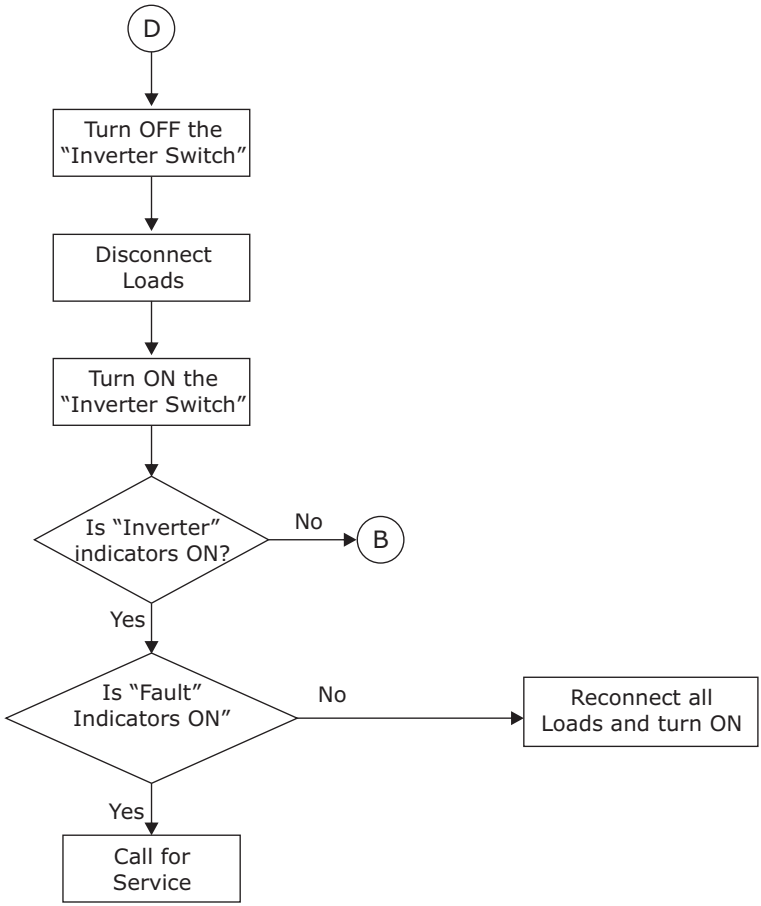


Fig : IV-4

6. Technical Specifications

Model		RENATA-I				
KVA		5KVA	7.5KVA	10KVA	15KVA	20KVA
Power rating		4KW	6KW	8KW	12KW	16KW
AC Input	Voltage	230VAC	415VAC			
	Voltage Range	160 – 270VAC	330 – 470VAC			
	Frequency Range	46 to 54Hz	46 to 54Hz			
	Phase	Single Phase	Three Phase			
Battery	DC voltage	192V	384V			
	No. of Battery's	16	32			
	Back up time	Depends upon battery capacity	Depends upon battery capacity			
	The lowest discharge Voltage	168V(1.75V/cell)	336V(1.75V/cell)			
Charger	Charging Voltage	216V(2.25V/cell)	432V(2.25V/cell)			
AC Output	Voltage	230V+ 1%				
	Frequency (I)					
	Sync mode (ii)	46 – 54Hz				
	Free Running mode	50Hz ±0.5Hz				
	Power factor	0.8				
	Phase	Single Phase				
	Synchronize Rate	<1Hz/sec				
	Crest Factor	3:1(At full Load)				
	Waveform	Pure Sine				
	Transient Response	<40mSec				
	Harmonic Distortion(V) a)					
	Linear Load b)	<2%				
	Non-Linear Load	<4%				
	Overload Detection	110 - 125% for 10 Min, 150% for 1 Min ,				
	Inverter Technology	IGBT with Sine Wave Pulse Width Modulation				
Transfer Time	Power Failure Or Recovery	0ms				
	Over Load Disappear	Auto transfer to UPS				
	Bypass - Inverter	<2.5ms				
	Inverter- Bypass	<5mSec				
Protections		Over load				
		Output Short Circuit				
		Over Temperature				
		Input Low/ High cut-off				
		Battery Low Trip				
LED indicators	Status	1.Line Input (Green),				
		2.Bypass On(Green)				
		3. Load On Bypass(Yellow)				
		4. Load On Inverter(Green)				
		5. Output On(Green)				
		6. Load On battery(Yellow)				
		7. Mains Fault(Red)				
		8. Battery Low(Red)				
		9. Inverter Fault(Red)				
		10. Overload/Output Short(Red)				
Level indicator	Battery Level oad	LED Bar Graph				
	Load Level	LED Bar Graph				
Display Parameters	DPM					
		Output Voltage				
		Output Frequency				
		Output Current/Capacity				
		Input Voltage				
		Input Frequency				
		Battery Voltage/Capacity				
Alarms	On Battery/ Mains Fail	Beep every 5 Sec				
	Overload	Beep every 2 Sec				
	Ups Fault	Continuous Beep				
Noise"Level	1 m. Distance	< 60dB				
Environment	Temperature	O°C -45°C				
	Humidity	0-90% (Non-condensing)				
Physical Size	L*D*H(mm)	610*300*720	630*350*850	630*350*850	650*400*1000	650*400*1000

Note: Specifications are subjected to change without prior notice

Our Contact Information

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